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Fact Sheet – Wildlife

Wildlife is abundant throughout Acadia National Park, although not always obvious. Many animals are nocturnal or secretive, and therefore go unseen. On closer inspection, however, signs of their presence are everywhere. The protection Acadia National Park provides animals and their habitat allows opportunities to learn more.

From the brook trout breaking the surface of Bubble Pond to the peregrine falcon soaring high over Jordan Cliffs, the land, water, and sky at Acadia are filled with a wide variety of animal life. Some call the park their home, others are simply passing through en route to a far-off destination, but all are closely tied to this unique and fragile environment.

Protecting species hinges directly on habitat preservation and Acadia National Park's role is critical. Habitat loss is the greatest threat to plant and animal species. Changes in the landscape, primarily due to human impact, are the number one cause for a species to become threatened, endangered, or extinct. An endangered species is one in immediate danger of extinction due to low or declining numbers. A threatened species will probably become endangered if current population levels experience any further decline.

An understanding has evolved that the demise of a species is not the only loss—genetic diversity and the species niche in an ecosystem vanish forever. National parks become even more important in the face of such concerns. Without protected lands, the rate of loss might be even greater. Acadia's forested woodlands, shimmering lakes, quiet marshes, bold, rocky shores, mountain cliffs, and coastal islands support a great diversity of animals.

AMPHIBIANS AND REPTILES

The lakes, ponds, streams, and ephemeral vernal pools of Acadia National Park are rich in amphibian life. Eleven amphibian species, including frogs, salamanders, and one toad, have been identified on park lands and three other species have been historically reported in the park.

A visitor does not have to spend much time in Acadia before being alerted to the presence of amphibians by the distinctive chorus of the spring peeper or the guttural croak of the bullfrog. Salamanders find clever hiding spots in wooded areas, wetlands, and streams, but can be seen by the astute observer!

A sunny summer day is a good time to locate the park's reptiles. Five species of snakes, none of them poisonous, might be found warming themselves on a rock,

moving through some brush, or slithering across a carriage road. A painted turtle might be sighted soaking up the sun on a log along a lake's edge. The most dangerous reptile on the island is the snapping turtle. They're named "snapping" for a reason! *For more information, see page 3-34 and appendix B.*

BIRDS

With over 300 bird species identified on Mount Desert Island and its surrounding waters, Acadia National Park is considered one of the premier bird-watching areas in the country. Through the years, park staff and countless amateurs have observed the gradual extension of southern and temperate bird species to the region. Twenty-one species of wood warblers alone have been recorded as breeding in the park!

Acadia's offshore islands are also important nesting grounds for many birds, often marking the southern breeding limit for the species. Due to their secluded location and productive marine environment, the offshore islands administered by the park also serve as a critical nesting habitat for eiders and other sea birds, raptors, colonial birds (herons) as well as providing important wintering habitat for northern shorebirds (purple sandpipers), and harlequin ducks.

Both the swift peregrine falcon and the bald eagle actively use areas within Acadia National Park. Eagles have been studied for several years to determine their breeding activity and population changes, and their response to environmental contaminants and human-caused disturbance. Peregrine falcons have rebounded since being on the brink of extinction in the mid-1960s. The falcons were reintroduced into the park in 1984, and have been returning of their own accord to nest successfully from 1991 to the present. *For information on some common birds, see each specific fact sheet, (pages 3-24 - 3-33). See also appendix B.*

FISH

Historic records indicate that 31 fish species have been encountered in the lakes, ponds, and brooks of Acadia National Park, although only 24 species can be found today. Fifteen of these species are considered to be native, while the remainder are non-indigenous, often the result of stocking programs. The "missing" species are all non-natives that are no longer stocked.

While brook trout, lake trout, landlocked salmon, and smallmouth bass are perennial favorites of anglers visiting the park, many of Acadia's fish are non-game species. The American eel, the banded killifish, and 3 species of sticklebacks are only part of the diversity of freshwater fish varieties found at Acadia. *For information on Acadia's fish, see page 3-39 and the fishing fact sheet on page 4-21.*

INVERTEBRATES

Black flies, mosquitoes, and lobster are perhaps the most-well known of the invertebrates at Acadia with the latter falling in a more loved category by visitors than the first two.

Over a thousand species from 18 phyla of invertebrates have been reported from the park and the Mount Desert Island area. Insect inventories in the late 1940s reported over 6,500 species and subspecies of insects. William Proctor, of Proctor and Gamble fame, conducted this survey of the insects and spiders of Mount Desert Island between 1927 and 1945 “to add to the general knowledge on the insect fauna of a part of the Northeast section of this country.” The thoroughness of his effort is best illustrated by some of his descriptions of collection sites and conditions.

- *October 6, 1927*: Stanley’s Lobster Pound, Seawall. Old lobster, clam shells, and fish refuse.
- *June 25, 1928*: Salisbury Cove. Hatched from fungus found under birch log.
- *June 26, 1929*: Long Porcupine Island, breaking up rotten logs, mostly birch.
- *June 6, 1938*: Bald Mountain. West side of island, sweeping blueberry flowers and wild cherry blossoms.
- *August 29, 1944*: Town Hill cow dung for beetles.

A survey this extensive that is over 50 years old is very rare. There is a proposal to repeat this survey to find out how the insect diversity on Mount Desert Island has changed over the past half century. Such a study would tell about the biological diversity of the coast of Maine, including whether that diversity is increasing or decreasing as pollution and the summer population rise.

MAMMALS

From the big and charismatic, like the red fox or white-tailed deer, to the not so obvious, like the star-nose mole and the masked shrew, it is the diversity of habitat and its protection that allows such a range of species. Acadia is an important laboratory for numerous wildlife research studies that help park managers better understand the forty terrestrial mammal species and twelve species of marine mammals that call Acadia home.

For information on the more common mammals, see each specific fact sheet in this section on pages 3-11 – 3-23. See also appendix B.



Fact Sheet – Keeping Wildlife Wild

Just as wildlife has a niche in the environment, we, too, must find our niche as wildlife observers. We are temporary visitors to the permanent homes of many species and we must ensure that our actions do not interfere with their basic requirements for survival.

KEEP YOUR DISTANCE

Observe animals quietly at a safe distance, allowing them to continue their normal activities. Most animals require a specific habitat for refuge, hunting, and feeding. This is particularly critical during nesting seasons when animals are devoting most of their energy to protecting or feeding their young. Human intrusion may cause serious stress on an animal, forcing it to move to less suitable areas or abandon its young.

Nesting eagles, seabirds, seals, and other marine mammals need at least one quarter mile distance from people and their activities to avoid disturbance. Using binoculars provides a close view and is less stressful to wildlife.

FEEDING WILDLIFE CAN HAVE DEVASTATING CONSEQUENCES

It is tempting to feed a flock of gulls or an engaging red fox. However, this practice makes wild animals dependent on humans and less able to forage effectively for themselves. It also makes them vulnerable to poachers, whom wildlife may see as a source of food. Associating people with food can cause animals to become aggressive, and possibly attack.

Aggressive wildlife cannot simply be moved to more remote areas. Most areas already have established wildlife populations. Relocated animals upset the balance in these areas, putting the relocated animal at risk from predators and competing animals. Some studies indicate that three-fourths of relocated raccoons do not survive. Animals have died accidentally or have had to be destroyed as a result of their dependence on human food. Feeding wildlife can contribute directly or indirectly to the animal's death. All wildlife in Acadia is protected under federal and state laws. It is illegal to feed, harass, or collect wildlife in Acadia National Park.

GIVE ME A BRAKE!

Drive slowly and observe speed limits. This will increase the chance of seeing more animals and gives wildlife a chance to safely cross roads. A porcupine, beaver, or a turtle crossing the road is no match for a speeding car. Be especially alert at dawn and dusk when mammals are most active.

BE A WILDLIFE WATCHER

A duck swimming across a pond, a cedar waxwing feeding its young, or harbor seals hauled out on rocky ledges, are some of the wildlife activities one might observe in Acadia National Park. Seeing wildlife in its natural habitat can be the highlight of a trip. It also allows for the opportunity to gain a better understanding of the animal and its niche in the environment. Ask your students to sharpen their observation skills and follow the wildlife stewardship practices outlined above. This can enhance everyone's opportunity to view and enjoy Acadia's diverse wildlife.

Report the location and condition of injured or abandoned wildlife to park staff. Do not attempt to move an animal. Unaware of your intentions, an animal may try to defend itself, resulting in further injury to the animal or injury to you. In the spring, harbor seal pups are temporarily left on beaches by their mothers, who are feeding nearby. Leave them be. It is illegal to handle these animals under the Marine Mammal Protection Act. Report any harassment of wildlife to park rangers. Call the park dispatch office at 288-8791.

You can also help park staff in protecting wildlife. If you observe an uncommon species or interesting wildlife behavior, please fill out a wildlife observation card at any information center. Your observations may be important to park scientists or resource managers.



Fact Sheet – Wildlife Research

Wildlife research answers questions such as: what are the identifying habitat preferences of selected species?; or, how do species compete? Completed studies let managers understand the species protected by the park, so that decisions, like the rerouting of a hiking trail, have limited environmental impact.

Current wildlife studies, as well as other park research can be found at www.nps.gov/acad/rm/research/htm. In addition to those studies, park staff annually monitor nesting federal endangered peregrine falcons and threatened bald eagles, breeding terrestrial birds, migrating fall raptors, amphibians, and beaver populations.

In wildlife research and monitoring, methods of data collection may be as complex as radio telemetry or as simple as looking for indirect evidence of mammals. The following are some examples of studies and the methods used to gather data.

INVENTORIES ARE THE FOUNDATION

Without basic biological data, upholding the National Park Service's mission of protect and preserve becomes more difficult. Protection relies on information. A careful list of resources -an inventory- adds to the general knowledge of park resources. In particular, inventories allow for managers to: 1) document changes, 2) understand ecosystems, 3) identify sensitivity, 4) prescribe further monitoring, 5) make decisions, 6) influence others, and 7) comply with legal mandates.

A major park inventory on Schoodic Peninsula in the mid-1990s was designed to acquire baseline data since no major biological information was available. Using wildlife census methods, biologists could estimate population size, density, distribution, and/or range of many of Schoodic Peninsula's mammals, birds, amphibians, and reptiles.

Indirect methods of sampling, like identifying signs of mammal activity such as feces, tracks, hair, lodges, and burrows, and by direct observation, provided information about the peninsula's medium to large mammals. Biologists conducted a small mammal population count using live and pitfall traps that were checked daily. Trapping, visual, and auditory searches were used for amphibians and reptiles.

Initial data compared with later data may lead to understanding animal's population growth or decline, associated factors affecting that fluctuation, and potential relationships among different species' populations (example: predator-prey).

WHAT'S WRONG WITH THIS PICTURE? ACADIA'S BALD EAGLES

Recent reproductive failures of up to 40% in the Acadia bald eagle population raised questions about why an area with prime bald eagle habitat and far from pollutant releasing industrial areas could not support healthy bald eagle populations. Suspicions led to potentially high levels of contaminants—mainly polychlorinated biphenyl (PCB)—linked to lowered reproduction.

To learn more, eagles had to be captured by experienced researchers who removed the eagles from their nests. Blood and feather samples were collected and tested for heavy metals and PCB content. As suspected PCB levels were high. What could attribute to this higher level? Banding individual birds could help researchers understand more about bald eagle ranges, habitat use, and longevity. In addition, two adult eagles were equipped with radio transmitters allowing researchers to track the traveling birds daily to help in determining where they fed.

Although a low percentage of banded birds are recovered, that information gives biologists vital information. Anyone finding a banded bird or spotting one should send that information to: U.S. Fish and Wildlife Service Bird Banding Laboratory, Laurel, MD 20708.

FOLLOW THAT DEER – TELEMETRY

White-tailed deer low population numbers were odd considering Acadia's habitat could support higher numbers. Why was this? To answer this question, both adult deer and fawns were tracked using radio telemetry. This method of study aids researchers in learning more about the day to day movements of wildlife and their feeding habits, social interactions, and causes of death. Equipment consists of a directional antennae and receiver, in addition to the radio carried by the animal, whether as an ear tag, collar, or in an ingested form. This equipment is supplemented by binoculars, tape recorder, notebook, maps, and compass.

Radio telemetry was essential for finding the fawns for the study. Researchers first located pregnant collared does ready to give birth. Then once the fawns were born, researchers searched for and collared 29 fawns with collars that expanded and eventually fell off as the fawn grew. Results from the study showed that the deer population was healthy, but numbers were most likely kept down by three sources of mortality: 1) coyotes, 2) domestic dogs, and 3) automobiles.

QUIET WETLANDS – WHERE ARE ACADIA’S FROGS?

Amphibians are good indicators of the overall health of the environment for several reasons: 1) their permeable skin and egg shells make them susceptible to absorption of toxins, 2) their shell-less eggs leave them unprotected from radiation, 3) their complex life cycles force them to come into contact with both land and aquatic environments, and 4) they remain in small areas their entire lives and therefore, their declines may reflect what is happening in that locality.

These above reasons are why the recently discovered mass die-off of specific frog species in five wetland sites at Acadia prompted immediate questions and need for investigation. How did a fungus and certain viral and bacterial strains, never recorded in the United States before, wipe out entire populations of frogs at each site? Is this a naturally-occurring event, or is it the result of environmental degradation? If human-caused influence is involved, is it from a thinning ozone layer or pollutants? A major three-year study will hopefully find answers.

For more information on Acadia’s resource management and research programs, see Resource Management fact sheets, pages 3-81–3-102.



Fact Sheet – Beaver

Castor canadensis

Busy as a beaver is a good description when it comes to the largest rodent native to North America, second largest in the world only to South America's capybara. Beavers have the special ability to make major changes in their environment, altering land to suit their needs. Humans are the only other creature to alter their habitat so much. The range of the beaver covers all of North America, except the extreme north and parts of California, Nevada, Arizona, and Florida. They prefer slow moving streams or rivers bordered by a suitable woodland food source. At Acadia that means birch and aspen forests located near a brook or pond.

An adult beaver averages 3 1/2 feet long and can weigh from 28 to 75 pounds. Their massive skull supports strong jaw muscles capable of dragging trees used for building dams. Its incisor teeth are wide and chisel-like, while its flat molars are used to grind woody vegetation. The beaver's large, webbed hind feet make it a powerful swimmer. Split toenails on the second toe of the hind feet and the small dexterous front feet spread an oil over the body to keep its fur sleek and water repellent. Long, coarse guard hairs give the fur a rich brown color while the paler, compact underfur keeps water from reaching the skin. The large, flattened, scaly tail is used as a rudder and allows the beaver to swim and steer while towing branches and logs. On land the tail props the beaver into an upright position while felling trees. Valves automatically close the nostrils and ears when a beaver submerges and reopen when it surfaces. Beavers can remain underwater for up to 15 minutes. Their lips can close behind the teeth to permit chewing while underwater. A clear membrane protects the beaver's eyes while submerged. Except for vision, the beaver's senses are highly developed.

Beavers are herbivores. They eat the buds, leaves, twigs, and soft cambium layer of bark of certain trees as well as many types of aquatic vegetation including sedges, water grasses, fleshy roots, and water lilies. Beavers prefer small trees but large trees are used too. During autumn, beavers cache a winter supply of branches and logs in the water near their lodge to use when the pond is iced over.

The squat, rotund body of the beaver makes it clumsy on land. Beavers spend much of their time constructing and maintaining their environment. By digging channels, damming creeks, and constructing lodges made of sticks and mud this defenseless, slow moving mammal creates escape routes and shelter. In winter the lodge is frozen hard as concrete and is able to stop the teeth and claws of the strongest and most determined predator.

Between late April and late June an average of 4 kits are born in the lodge. Beavers mate for life and the family unit is centered around the breeding female. When born, the kits are covered in fur and their eyes are open. The characteristic flat tail of the adult is more rounded on the kits. After one month the young are able to eat solid food. The young stay with the family unit for two years and are then driven off by the parents.

The shallow ponds created by these engineers of nature provide valuable habitat for many other creatures; waterfowl come and feed, frogs and insects are both hunter and hunted, and mammals such as otter, muskrat, and moose find a home sweet home. In addition, their dams prevent erosion, conserve water, and increase the water quality of rivers by reducing the amount of silt flowing into them. Active lodges at Acadia vary year to year according to food availability and continued habitat suitability. Ask staff at the visitor center if they are aware of the best locations for beaver watching.

Before Europeans arrived, the beaver population in the United States was estimated at 60 million. During pioneer times, the beaver's valued pelt, musk glands, edible flesh, and the ease of locating and trapping the animal contributed to its decline. They were trapped to extermination on Mount Desert Island and reintroduced in 1920 by George B. Dorr, the park's first superintendent. Since 1930, regulations and protection have allowed the beaver to make a natural comeback. Today it is estimated that there are more than 2 million beavers in the United States. In fact, the beaver is considered a pest in some areas due to felled fruit trees, damaged ornamentals and cultivated crops, and flooded roadways caused by dams. At Acadia, it reaches pest status when its dam causes the flooding of the Park Loop Road or carriage roads!



Fact Sheet – Eastern Coyote

Canis latrans

As the sun sets the coyote begins its evening song. Soon others join in the call. The coyote is one of the fastest mammals in North America, running at speeds up to 40 mph. Coyotes have expanded their range across the eastern United States due to the elimination of wolves and the creation of favorable habitat due to breaking up forests for settlement by humans. They prefer open regions such as farming areas and forest clearings and they have adapted to urban habitats. Their home range is from 5 to 25 square miles depending on habitat quality and food availability.

In 1981, the first documented coyote sighting on Mount Desert Island was recorded. To learn of their relationships to red fox and white-tailed deer on the island, 12 coyotes and 14 red fox were collared and tracked for two years. One radio-collared coyote went from Northeast Creek (off of Route 3 before reaching Salisbury Cove) all the way to the west side of the island, and then swam to Bartlett's Island (an island off of Pretty Marsh on the island's west side), and then back to Northeast Creek.

This opportunistic feeder is both a scavenger and a predator. 90% of a coyote's diet is made up of rodents and rabbits. Such small mammals are usually taken by stalking and pouncing. Coyotes have been seen snatching fish from shallow streams and taking large prey, such as white-tailed deer, by pack hunting. Other foods that comprise their diet include songbirds, snakes, frogs, crayfish, insects, fruits, and plants. Coyotes have been known to prey on livestock. And because of this, farmers and trappers have used every known method to catch or kill this animal. This activity has had little impact on the species. At Acadia, the study concluded that deer were part of the coyote's diet, especially in the winter when deep snow made it difficult for deer to escape. Other food preferences include snowshoe hare, blueberries, and insects.

The coyote is a medium-sized member of the dog family. An adult male averages 4 feet long and weighs from 15 to 50 pounds. Females are about 1/5 smaller in size and weight. Long, slender legs, a tapered muzzle, and large pointed ears give the coyote its characteristic look. The color of the fur varies from buff yellow to grey. Black-tipped hairs give the back, neck, front of legs, and top of the tail a grizzled appearance. The chest, abdomen, area around the lips, inside the ears, and the tip of the tail are creamy white. Their eyes are yellow, like a fox, but their pupils are round, unlike the elliptical pupils of the fox. When running, coyotes carry their bushy tail below the level of their back while wolves hold their tail up above the level of their back.

Although coyotes rarely mate for life, a pair may remain together for several years. A hollow log, rocky ledge, or an enlarged animal burrow, is selected as a den for raising the young. The female will prepare more than one den before the pups are born so that the young can be moved to another den if there is a disturbance. Averages of six young are born during April or May. When born, the pups eyes are closed and they are covered with short, yellow-brown fur. After about ten days their eyes open and they begin to move around the den. The male brings food to the female for the first two months after the pups are born. Some of this food is regurgitated to feed the young during and after weaning. After about eight weeks the pups have been weaned and the den is abandoned. By following along on hunting trips and watching the parents the young are taught to hunt. By the end of the summer the pups are out looking for their own territory or have formed a pack with the parents.

Coyotes can be active at any time during the day, but they are most active in the early morning and at sunset. They lead lives that vary from solitary to sociable and coyotes communicate with one another using a variety of senses including visual, auditory, olfactory, and tactile. The coyote has learned to adjust to rapid changes in its environment, and for this reason this species will continue to flourish and expand its range in the future.



Fact Sheet – Harbor Seal

Phoca vitulina concolor

Harbor seals are playful and inquisitive creatures. A year round resident in the Gulf of Maine, this species is frequently reported and known locally as the common seal. Popular haul-out locations include Egg Rock and Bunker's Ledge, accessible only by boat. It is rare to see harbor seals close to Mount Desert Island shores.

This species basks and sleeps on coastal islands, ledges, and sandbars during low tide. During high tide they can be seen bobbing in the water while foraging for food. Harbor seals are carnivores, with a diet that includes herring, squid, cod, flounder, and several other invertebrates, depending on what they can find. Like other carnivorous mammals, seals are intelligent and have well developed senses.

Their eyesight is keen in water, functional in air, and adaptable to the darkness of deep dives and the dark winter months of northern latitudes. Hearing is acute in both air and water. The sense of smell operates both in the air, as when a mother identifies her pup, and underwater by picking up dissolved molecules from their environment. The nostrils and ears are normally closed and are opened by voluntary muscles only when the head is above water. This energetic predator may consume up to 10 percent of its body weight in fish per day.

Seals move in the water by waving the hind flippers from side to side. Movements on land or ice are awkward, the fore limbs propel the seal forward while the hind limbs are dragged along behind. The harbor seal looks like it's wiggling along on land.

Adult males average 5 feet and 200 pounds while adult females average 4 feet 8 inches and 156 pounds. Females mature first, at 3 to 4 years of age, while males mature at 4 to 6 years of age. Both sexes are similar in appearance. The coat varies from light gray or tan to brown, black, or even reddish, with fine dark mottling on the back.

Pups are born from late April to mid-June, weighing 21 pounds and measuring 2.5 feet on average. Pups are born on land and are able to swim by the next high tide. Nursing takes place ashore or in the water and lasts about 30 days. About 30 percent of the pups die during the first year; some of the causes are abandonment by mother, disease, storms, parasites, and predation by ospreys, black-backed gulls, and sharks. Occasionally, seal pups are found along Acadia's coastline. It is best to leave the pup alone as the mother may return to it. If the pup is there for more than 12

hours, call the Marine Patrol in Ellsworth at 667-3373 or the Marine Mammal Stranding Hotline at (617) 973-5247. Harbor seals have lived 35 years in captivity.

During the late 1800s fishermen complained about seals damaging nets and competing with them for commercial fish. A bounty of \$1.00 per animal was established in Maine. By the early 1900s, harbor seals were nearly exterminated along many areas of the coast with no noticeable effects on fish catches. The bounty was lifted in 1905 and they began to regain their former numbers. In 1972, the Marine Mammal Protection Act prohibited taking harbor seals in the territorial waters of the United States without a permit.



Fact Sheet – Raccoon

Procyon lotor

The conspicuous black mask across the eyes and cheeks and the round, bushy tail of the raccoon make it one of the first wild animals we learn to recognize as children. This clever, curious creature has been known to open coolers, remove trash can lids, and live in chimneys or attics. Campers at Blackwoods and Seawall campgrounds know these creatures all too well. Anyone who has left food exposed for a short period of time will most likely come face to face with this nuisance pest.

The raccoon lives in all 48 of the contiguous United States and its range is confined to North America. It prefers wooded areas along waterways but can be found in almost any urban environment, utilizing sewer pipes, culverts, and drainage pipes for travel to feeding areas. It's one of the few large mammals that have done well in an urban habitat. Raccoon dens are located in tree hollows, brush piles, rock crevices, buildings, or other man-made structures. If an adequate food supply is available, the home range of a raccoon is about one square mile.

Raccoons average 12 to 30 pounds but can weigh as much as 55 pounds and are about 3 feet long. Besides the characteristic mask and ringed tail which ends in a black tip, its fur is long, thick, and grizzled gray in color. The raccoon walks flat-footed, just like humans. The soles of its feet are hairless with five flexible toes and sharp claws which aid it in climbing trees.

Raccoons are omnivores, meaning they will eat anything they can find including garbage. Much of its diet is taken either in the water or along the water's edge. Crayfish, crabs, frogs, fish, and salamanders are favorites. Along the coast, tidepools and mudflats are visited for tasty treats. In addition, they eat almost every edible fruit and nut within their range as well as insects, worms, slugs, snails, sweet corn, small mammals, and birds as large as geese. It is not surprising that an animal with such a varied diet has a brain that is capable of problem solving and learning. Raccoons eat more during autumn than at other times of the year. By increasing their body fat by 50 percent in the fall, they are able to survive the winter months when little food is available.

They have well developed senses of hearing, sight, and touch. Although its rounded ears are small, the eardrums are well developed. Raccoons pay close attention to any noise that sounds out of place in their environment. Being nocturnal, their eyes are adapted to utilize all available night light. Their black, alert eyes also reflect the

raccoon's intelligence and curiosity. Even though the raccoon does not have an opposable thumb, its fingers are so dexterous that it can locate food by touch alone. At one time it was thought that the raccoon always washed its food before eating. Today it is thought that water heightens its sense of touch and for this reason it seems to wash its food.

Averages of four young are born during April and May. At birth, the young weigh only a few ounces and their eyes are closed. After about 2 months, young raccoons begin to leave the den for short periods of time. They remain with their mother during spring and establish their independence in a nearby den by late summer. Yearling raccoons leave the area to go off on their own at about 14 months of age. These black-masked bandits do not hibernate during winter but will stay in their dens for extended periods of time. Raccoons are known carriers of rabies and should not be handled. Cases of rabies have been reported in the Acadia area.



Fact Sheet – Red Fox

Vulpes vulpes

Sleek and sly. Cunning and crafty. These words bring to mind the image of a red fox. Our language has taken on many different meanings when it comes to this wily creature: sly as a fox, foxy lady, outfoxing your opponent. The red fox has one of the largest geographical ranges of any species in the animal kingdom. Beyond America, it is found in Europe, Iceland, India, North Africa, Japan, and even Australia where it was imported during the late 1800s for the sport of fox hunting.

This species prefers to live in open regions such as farming areas, alpine and arctic tundra, meadows, brushy fence rows, woody stream borders, forest clearings, and along beaches bordering large lakes. At Acadia, it is known to visit tidepools for a meal. It has adjusted to living closely with humans and is often seen running across roads. For many years near Sand Beach and Thunder Hole, red foxes learned the fine art of begging for food. Feeding any wildlife is strongly discouraged by park staff, and in this case, led to the removal of the individual foxes in that area. The size of the home range of the red fox is influenced by habitat quality and food availability. In ecologically diverse habitats, red foxes may live in an area as small as 140 acres. Where less diverse habitat exists, they may require two to three square miles to fulfill their needs. At Acadia, studies indicated that with the arrival of the eastern coyote, the red fox territories fell in between coyote territories.

Long-legged and built for speed, the red fox is as handsome as it is swift and cunning. A thick, full coat makes the fox appear much larger than its 9-12 pounds. A bushy tail makes up half of the total length of its 3 foot body. Although its coat varies in color from deep, russet red to sandy blonde, the legs, feet, and back of the ears are usually black. The pupils of the fox's eyes are elliptical, more like a cat's eyes. This adaptation lets more light filter through the pupil allowing the fox better vision for night hunting. Their teeth add layers continuously to compensate for the wear and abrasion of gnawing and chewing. Its hearing is so sensitive that it can follow the footsteps of a mouse concealed under vegetation or snow. The red fox's nose is estimated to be 100 times more sensitive than that of humans.

The diet of the red fox is limited only by what it can catch or find making it an omnivore. Its preference is for small mammals such as mice; but frogs, insects, birds, bird eggs, snakes, carrion, and plant material such as acorns, grasses, and fruits are often eaten. Like their cousins, wolves and coyotes, foxes often bury any food they can not eat right away.

Unlike their canine cousins, foxes are solitary and hunt alone except during the breeding season. Foxes tend to mate for life. The dog, male, and the vixen, female, find each other and pair up in mid-December after having lived alone since the last family unit broke up the previous fall. The pair will stay together until early fall when the pups and parent each go their own way.

The vixen chooses an abandoned animal burrow to raise her young in. After a little remodeling and enlarging the den is ready for an average of five pups to be born during March or April. The dog remains outside, leaving food by the entrance of the den. The pups grow quickly and soon the parents begin to bring them half-dead animals to play with. This “playful hunting” teaches them the skills they will need for survival.



Fact Sheet – Red Squirrel

Tamiasciurus hudsonicus

Red squirrels are very easy to observe at Acadia. Simply hiking in the vicinity of one will elicit a scolding. Dismantled red spruce cones littered on the forest floor are further evidence of the red squirrel's activities.

Red squirrels are high energy animals. Where some squirrels are shy and secretive, red squirrels are bold and aggressive. It is not hard to picture a red squirrel displaying displeasure with an intruder by foot stamping, tail flicking, and chattering. They are noisy and seem to be constantly on the move. This arboreal kamikaze runs through trees at high speeds, leaping from branch to branch, and dropping spread eagle to the ground. Its small size, white eye ring, tufted ears, black lateral stripe, and reddish coat and tail make the red squirrel easy to distinguish.

Being a tree squirrel, it inhabits northern cone-bearing evergreen forests, mixed conifer and hardwood stands, and, sometimes, pure deciduous hardwood forests. Their range extends from tree line in Canada and Alaska southward as far as New Mexico and Arizona and in the higher mountains of the south. Red squirrels are not highly social. They are solitary but use a home range which is partly shared with others. Both sexes are territorial and defend their territories against intruders by using at least four different vocalizations during encounters.

Because of their high metabolism, red squirrels require a diet high in energy content. They are opportunistic feeders and rely on seasonal foods in addition to the year round supply of acorns, conifer seeds, and nuts from the autumn harvest. They are more carnivorous than other tree squirrels, eating insects, bird eggs, and nestlings. This species has even been known to rob meat used to bait traps. They gather bushels of cones and store them in huge piles, called seed middens, which can be three feet deep and several yards across. Since they do not hibernate in winter, caching seeds and fungi in tree hollows that are dry and protected provides a steady food supply during the winter months.

Red squirrels have two litters each year. The young are born and reared in a tree cavity or hollow trunk. If a den is not available, the female will build a round leaf nest in the branches of a tree. At Acadia, nests are made from twigs, cedar bark, and Old Man's Beard, the stringy lichen found growing on spruce tree branches. A single litter may contain four to seven young. At birth, they weigh half an ounce, their skin is pinkish, and their ears and eyes are closed. After about five weeks their eyes open

and at six weeks the ear canals open and fur covers their body. The young squirrels stay with their mother about three months or until she has a second litter.

Red squirrels become inactive for short periods of time in winter to avoid cold temperatures and storms. In spring, seeds left behind in caches sometimes sprout, making the red squirrel a beneficial forester of the woods. These acrobats of the forest are fascinating to watch as they scurry through the trees.



Fact Sheet – White-tailed Deer

Odocoileus virginianus

White-tailed deer are extremely plentiful in the United States. Population estimates are at 12 million. The proximity of agriculture and forested areas provides abundant habitat for white-tailed deer and is one reason for their large populations. Deer, under good conditions, eat about 2.5 lbs of food a day. The preferred browse in Acadia National Park is cedar and certain species of pine, maple, and birch. In addition, acorns, apples, alfalfa, and clover are favorites. During winter months feeding is at a minimum and deer are often found in groups.

The results of the previous November's mating season are evident as does give birth, usually to twins, in May or June. To protect the young, the mother finds a safe and densely wooded area where the young's protective white spots mesh with dappled sunlight on the forest floor. Fawns barely move until 8-10 days old. Their ability to remain still is their most important survival tool until they are able to run to escape danger. Does, attempting not to draw attention to the young, will leave for two to eight hours at a time to forage, and return only to nurse each fawn for a few minutes. People who stumble across fawns may mistakenly believe they have been abandoned and try to take them—usually to the detriment of the fawn. Deer are reproductively mature by one and a half years, and in their prime reproductive years until they are eight years old.

White-tailed deer populations at Acadia National Park have fluctuated in the past half century. Prior to the fire of 1947, which burned over 17,000 acres on Mount Desert Island's east side, Acadia's deer herd was smaller than a few years after the fire. This increase resulted from the replacement of the predominant spruce forest with a forest abundant in the favorite food of deer—certain species of deciduous trees (such as birch) and shrubs. In time, these forests changed again due to the natural progression of succession. Finding browse for the larger deer herd became more difficult, resulting in overbrowsing and malnourishment. The population stabilized toward the end of the 1960s due in part to a selective hunting program in the park. The program ended once the deer herd was considered healthy.



Fact Sheet – Bald Eagles

Haliaeetus leucocephalus

Bald eagles, our national symbol, give each of us a sense of the wild. They are large birds with a wingspan of up to seven feet. Their characteristic white head and tail set them apart. “Bald” comes from an old English word meaning white. Their Latin name, *Haliaeetus leucocephalus*, means white-headed sea eagle. This characteristic trademark does not appear until they are between four and six years old.

Keen eyesight and huge talons assist in searching for their primary food—fish. Bald eagles also eat carrion and occasionally bully other birds to abandon food. On the coast of Maine, the majority of their diet is seabirds. Their preferred habitat is forested shoreline along open water. Eagles are found from British Columbia and Alaska, across Canada, and down towards Florida. In Maine, the highest concentration is along the rocky coastline.

Eagles build large nests of sticks, known as aeries. Look for an eagle’s aerie just below the crown of trees or on a ledge. Each year eagles return to the same nest site, adding more sticks. Some nests may eventually measure up to eight feet in diameter and 10 feet deep. Eagles raise one brood each year consisting on the average of one or two chicks. Both parents share in incubating the speckled white eggs for approximately 35 days. The white downy young rapidly grow to match their large “beak and feet” size.

It can take up to four months for flight feathers to develop on eaglets. Feeding occurs several times a day during this time. As the eaglets grow and strengthen, the parents provide whole prey for them to tear up. Wing flapping practice begins as they approach the date of their first flight. Imagine the eagle’s amazement once they are airborne! Usually only one eaglet from the nest will make it to adulthood. Their life span may be as long as 30 years.

A milestone for bald eagles, as well as an outstanding achievement for the Endangered Species Act, was their removal from a federally endangered species to threatened on July 4, 1995. Populations are doing well in many parts of the country although habitat destruction and shooting continue to cause problems. Persistence of environmental contaminants like heavy metals (lead, mercury) and organochlorines (synthetic chemical compounds like DDT or PCB’s) also continue to cause concern. In Maine, bald eagles are still endangered.



Fact Sheet – Peregrine Falcons

For centuries, peregrine falcons hunted the skies of the world, displaying their impressive, in-flight hunting tactics. Imagine this crow-sized raptor flying high above its quarry, then diving (stooping) to attack prey at a speed of more than 100 miles per hour! Imagine the prey being struck to the ground or even killed in flight by the tremendous impact from the peregrine tail-chasing a dove between Dorr and Cadillac Mountains!

By the mid-1960s, researchers determined peregrines were no longer a breeding species in the eastern United States. Today several subspecies of peregrine falcons are endangered.

Nest robbing, trapping, and shooting first contributed to their downfall, followed in the 1950s by ingestion of chemical pesticides and industrial pollutants. Occupying a position high on the food chain, peregrines are still exposed to high levels of chemical residues if they migrate to or eat migrant song birds from countries using pesticides now banned in the United States. As in all birds of prey, ingested chemical toxins accumulate in their bodies causing reproductive failure, leading to the decline and even eventual extinction of the species.

When Congress passed the Endangered Species Act in 1973, mandating all federal agencies to protect endangered species and their habitats, Acadia National Park responded enthusiastically by participating in a cooperative management plan to restore a self-sustaining population of peregrines to the eastern United States. The Eastern Peregrine Falcon Reintroduction Program's goal is to restore the peregrine population to 50 percent of the 350 pairs estimated to have been present in the Eastern United States, during the 1940s.

The method used to increase falcon populations is the reintroduction of captive-reared chicks into the wild. This process is termed "hacking." Acadia first participated in the hacking program in 1984. Selected adult birds are bred in captivity. The eggs are incubated and hatched in a laboratory. Chicks three to four weeks old are transferred to a location, called a hack site, where scientists hope to establish a new falcon territory. Once there, they are kept several weeks in a protective wooden box with a view of the area to prepare them for release.

Hack sites are staffed around the clock by trained specialists who carefully monitor, tend, and feed the chicks for approximately three weeks. Attendants observe only from a distance at this time. Food drops are made via a long, sloping tube,

preventing the association of food with humans. When their wings are strong enough for flight, fledglings are released. The young falcons continue to eat at the hack site until they learn to hunt on their own.

Peregrines nested on Mount Desert Island at least as long ago as 1936; the last known nesting pair was reported in 1956. From 1984 until 1986, 22 peregrine chicks were successfully hacked in Acadia National Park from a high cliff face overlooking Jordan Pond. Adult peregrines often return to areas near their original hack sites. Acadia discontinued the hacking program in 1987 when adult peregrines returned to the area, for it was feared these adults would prey upon any released chicks.

From 1987 to 1990 adult peregrines returned to Acadia but did not produce young. 1991 marked the first successful nesting at Acadia in 35 years. Peregrines have returned to raise three to four chicks each year since then. Since 1995, a second pair of peregrines has nested on the west side of the island. In 1997, a third pair raised three young on Jordan Cliffs.

In 1993 and 1994, the chicks were banded to learn more about peregrine migration, habitat use and longevity. One of the chicks banded in 1994, a female, has nested in New Hampshire. Another is nesting in Boston.

Each year, in early spring, park resource managers watch intently for signs of returning peregrines. If mating or nesting behavior is suspected, certain trails may be temporarily closed to avoid disturbance to the nesting area. These measures are helping this magnificent falcon in making a triumphant comeback in Acadia National Park.

BEHAVIOR

Feeding: Hunts most vigorously at dawn and dusk in open areas; shores, marshes, and valleys. Hunting often accompanied by a series of sharp, aggressive, territorial calls, “kee, kee, kee, kee, ekk, – kee, kee, kee, kee, kee.” Plucks feathers from the prey as it feeds.

Strikes: Usually in mid-air, knocking the quarry to the ground. Less commonly, it will strike and grab prey and fly away.

Nesting: Mostly on precipitous cliffs, but will also nest under suspension bridges and atop tall city buildings. Eggs are laid on a sand or gravel covered ledge that has been scratched in preparation for the clutch. This area is called a scrape.

FIELD MARKS

Wings: Long, pointed, sickle shaped. All falcons in a dive appear to have sickle shaped wings. Wing shapes depend on the degree to which the bird is soaring or diving. Be careful in making identifications.

Head: Small with dark “sideburns.”

Size: Crow-sized, female larger than male.

Feet: Large (hence the nickname big-footed falcon). Adult: yellow. Immature: light green.

Plumage: Adult: white breast, dark gray back; Immature: streaked breast, brown back.

You can help protect and promote conservation of peregrine falcons in Acadia by:

- Learning characteristic field marks and behavior to make a positive identification.
- Reporting your sightings to any park information station.
- Keeping away from areas where peregrines are nesting and reporting any person who fails to do the same. Avoid observing the birds from a location higher than nest site. Adult peregrines generally won’t tolerate people above them and may dive at intruders, particularly if they are defending a nest or chicks.

PEREGRINE WATCH: WHAT TO LOOK FOR AT THE NESTING CLIFF

March to mid-April (courtship): Adult falcons fly close to each other near the nesting cliff, feeding each other, and perform in-flight acrobatics. The falcons are most vocal at this time. Typical breeding vocalizations are: “chup, chup, chip” or “Eeee, chup, chup, chup, chup.”

Mid-April through May (nesting): One falcon incubates eggs while the other perches nearby. Adults may exchange food in mid-air.

June: In early June, young falcons may be seen at the edge of the nest cliff as “tiny white snowballs.” Their markings will change as they mature. They may flap their wings to build strength for flight. They take their first flights in late June or early July.

July through August (fledging): Young falcons practice flight, exploring farther a field. Watch for them flying above the cliff or other parts of the island. They may perch anywhere on the cliff's ledges or on dead trees.

Fall and Winter (migration): Peregrines from Greenland and Canada migrate through Mount Desert Island from August through October. Some may spend the winter on Mount Desert Island depending on the severity of the winter or the availability of prey.



Fact Sheet – Raptor Migration and Hawk Watch

The summer rushes by and suddenly it is September. Just as the peregrine falcons are preparing to leave, another raptor watching opportunity arises: It's the Hawkwatch!

Throughout the fall, a variety of birds of prey—eagles, hawks, falcons, osprey, harriers and owls migrate over Acadia on their way south. From September through mid-October, park staff maintain an observation site on Cadillac Mountain to identify, count, and discuss migrating raptors. Visitors are welcomed. Call park headquarters at 288-3338 for more information.

All raptors are characterized by binocular vision, sharp scimitar-like talons, and a hooked beak. These attributes enable raptors to locate, catch, and tear prey apart with deadly accuracy. Raptors likely to be seen in Acadia range from the robin-sized American kestrel to the bald eagle with its eight-foot wingspan.

Why Acadia? One reason is that millions of birds of all kinds travel over the Mount Desert Island region from northern breeding territories to southern wintering grounds during the fall. To opportunistic raptors, these other migratory birds are an immense food source.

Topography is also essential to the dynamics of hawk migration. Many raptors are able to soar high on rising pockets of warm air created by uneven surface heating. To avoid traveling over water, where such "thermals" are unavailable, many southward-flying hawks turn and follow Maine's east-west trending coast right over Mount Desert Island. Acadia's mountains force prevailing winds into updrafts which the light-weight birds ride to elevations where they can glide effortlessly for miles.

The park's mountain slopes provide an especially good location for observation. You don't have to be a scientist or hawk identification expert to enjoy this spectacular autumnal parade, as thousands of visitors have learned. But amidst the excitement, conservation, and camaraderie common to any shared experience of nature's beauty, Acadia personnel keep records that contribute to a national effort to monitor and conserve raptor populations.

The counting of raptors contributes to conservation measures trying to offset habitat destruction, pesticide poisoning, illegal trapping for sale, and illegal taxidermy trade. The count creates an understanding of critical habitats, population trends, and increases public appreciation. An outgrowth of this important work is the fascinating knowledge gained about hawk migration dynamics.

A sampling of birds seen and counted September 16, 1997 during a six-hour time period:

- Sharp-shinned Hawk: 46
- Coopers Hawk: 1
- American Kestrel: 129
- Merlin: 5
- Peregrine Falcon: 1
- Broad-winged Hawk: 32
- Osprey: 3
- Northern Harrier: 4
- Unknown Raptor: 13
- Bald Eagle: 3
- Turkey Vulture: 2

In 1997, Hawkwatchers counted 2,735 hawks and falcons. On big days, up to 242 raptors were counted. They averaged seeing 15 raptors per hour over 186 hours of observation. Most commonly seen birds were sharp-shinned hawks (1,179); American kestrels (794); and broad-winged hawks (202). In 2001, the 7th year of the Hawkwatch, 3,545 raptors from 12 different species were identified.



Fact Sheet – Common Loon

Gavia immer

The common loon is a large swimming bird. This powerful swimmer can stay submerged for several minutes and cover hundreds of yards during a single dive. Loons are long, slender, and streamlined with legs attached to the rear of their body and webbed feet that serve as efficient propellers. They have a stout, dagger-like bill, relatively solid bones, and float low in the water. Their eyes are adapted for both aerial and underwater vision. These characteristics enable loons to pursue and catch fish underwater.

A “preen gland” located on the rump at the base of the upper tail feathers secretes an oil that is worked into the feathers with the bill and is essential in preserving the feathers. Apparently, the oil has many functions: to help keep the feathers flexible and waterproof and to inhibit the growth of fungi and bacteria.

The yodel, or call, of the loon has a haunting quality that is difficult to describe and hard to forget. This call signals territorial ownership of an area. Loons are known to claim and defend one lake as their breeding territory. If the lake is large enough, more than one pair may take up residence with each pair staying on its own turf.

Loons breed during the summer in freshwater lakes and ponds. Working together, the male and female build a platform type nest out of aquatic vegetation. One to three eggs are laid from mid-May to late June with both sexes incubating the eggs, in turn, for about 29 days. Both parents help in raising the chicks, feeding them small whole fishes, crustaceans, and bits of plants. Loon chicks take to the water within hours of hatching, and when alarmed will crawl up onto their parents back for a free ride and better protection. Besides a suitable nesting site, common loons also look for a “nursery” pool. This pool contains water clear enough for the chicks to spot their prey, shallow enough to limit the size of predatory fishes and turtles, and rich enough to supply the chicks with food for eleven weeks.

A graceful bird on water, the loon becomes clumsy on land and can barely waddle along. It is impossible for them to take flight from land and even from water they need a long takeoff. In winter, when the lakes and ponds freeze over, common loons move to rivers, tidal bays, and the open ocean along the Atlantic coast. In the Acadia area, from a distance, they can be mistaken on the ocean for cormorants. The loon’s profile is more parallel to the water than the cormorant, and the loon’s body sits higher in the water. Today, loon nesting areas are threatened from the wake of motorboats on lakes. Boats on Acadia’s lakes and ponds are restricted to 10 horsepower motors.



Fact Sheet – Seabirds

Acadia's numerous land holdings also include many off-shore islands that are critical habitat for nesting seabirds and sea mammals. These seabirds, which lay only a small number of eggs, can nest on exposed rocky ledges, in crevices, burrows, or in vegetation. Breeding on these islands is one strategy to protect them against predation. Many have lifespans of 20 to 30 years. Although they live in social groups, most are monogamous. Monogamy suits the demands of raising chicks with voracious appetites as both parents are needed for foraging and protection. While avoiding large terrestrial predators by nesting on ledges and islands, predation trouble still comes for many seabird eggs and chicks from gulls and bald eagles.

Disruption to nesting sites occurs when people do not use caution. Nesting islands should not be visited from April 1 to August 15 and many federal and state-owned islands are closed to the public. Even well-meaning visitors can frighten birds, causing them to abandon their nests, leaving the eggs and chicks open to predation.

DOUBLE-CRESTED CORMORANT

Phalacrocorax auritus—Often seen on rock ledges with their black wings outstretched like laundry lines, cormorants are a relative of the pelican. When swimming, cormorants can be identified by their long curved neck rising from the water while their body almost entirely disappears. Their slender bill is held upright at a slight angle. They are well adapted for diving for fish and can swim underwater in search of their prey, sometimes up to 100 feet.

COMMON EIDER

Somateria mollissima—The male eider duck is primarily white with striking black markings on its sides, tail, and top of its head. It is often seen floating with many other males in large rafts. Female eiders, which are a mottled brown color, build nests on islands in colonies with other eiders. Eiders seem to prefer islands where gulls already nest, despite the fact that gulls prey on eider eggs and chicks. After laying four to six eggs, the females incubate the eggs for 25 days, never leaving the nest. After the eggs hatch, the young eiders have a perilous journey to the water. Great-black backed gulls prey on the chicks and many do not make it to the water. Once there, they are protected in creches with one dominant female who is not necessarily the mother of the chicks. Twelve to 15 chicks can be seen following this one female. Other females become peripheral females in the group.

BLACK GUILLEMOT

Cepphus grille—A relative of the puffin, visitors have a much better chance of seeing this little bird on a local boat cruise. Guillemots are small black birds with a conspicuous white patch on each wing. Red feet and legs and a bright red mouth interior are striking. They sometimes can be seen “flying” underwater using their wings to help swim. Their nests are in crevices, under boulders or cobbles, or on rocky ledges. They only lay one to two eggs.

HERRING GULL

Larus argentatus—This is the most common gull, easily identified by its gray wings and black wing tips. A red spot on their bill is a visual cue for the young who peck at it, causing the adult to regurgitate food for the chick. They build shallow nests from grass and seaweed in the open where they have a view of their surroundings. Two to three eggs are usually laid. In the early 1900s gull numbers declined dramatically from hunting and egg collecting, but today there are over 200,000 breeding pairs off the coast of Maine. They are considered a nuisance bird because they take advantage of any food source, like garbage dumps and visitors who are unaware that the birds should not be fed, and in turn, are predators on other seabirds.

GREAT-BLACK BACKED GULL

Larus marinus—This seagull is much larger than the herring gull and has a wingspan of up to 65 inches. It is characterized by its black wings, giving it the name “ministers” of the coast. This gull was completely exterminated off the coast in the 19th century, not re-colonizing again until 1926.

OSPREY

Pandion haliaetus—Also known as a “fishhawk,” osprey have a remarkable ability to sight fish from 30 to 100 feet above the water. They dive from mid-air and grab the fish in their sandpapery talons, turning the fish head to the front so it is more aerodynamic. Ospreys have a brown mottled appearance with a white head and a dark band by its eye. When in flight, the white underside of each wing is visible and forms a slight “v.” They have a large wingspan of up to six feet. Nests, preferred on ledges or platforms are built by the male and female together and are continuously used. One, on the side of Sutton’s Island just outside of Northeast Harbor has been in existence for decades. Two or three eggs are laid and the young are ready to fly around 7–8 weeks old. By 10 weeks they are ready to try fishing. Pesticide use in the 1950s and 1960s, particularly DDT, weakened the shells of these birds as well as other raptors like the peregrine falcon and bald eagle, causing their population to decline. Today their numbers have rebounded.



Fact Sheet – Amphibians

To learn about amphibians here at Acadia National Park, one needs only to venture into the park with a receptive alertness. Crouched by the edge of a pond, one can watch a multitude of shimmery tadpoles dart by. The banjo plucking sound of a green frog can be heard in the park's marshes. Currently, 11 of the 19 amphibians identified in Maine (frogs, toads, and salamanders) are found in Acadia National Park. Although Acadia's geographic location and weather extremes present many challenges for amphibians, the park's protected diverse freshwater habitats are ideal for these water loving creatures.

Amphibians have a permeable skin which allows water to easily move into their body. Any excess is eliminated through the kidneys. While most have lungs or gills for breathing, all amphibians use their skin to take in some oxygen. When visiting a pond at Acadia, you may see frog throats rhythmically expanding and contracting. They are pushing air in and out of their bodies, exchanging oxygen and other gases. This adaptation is good while in an aquatic environment but can cause problems while on land. To avoid drying out, amphibians seek out shady and wet areas.

Water also plays an important role in amphibian reproduction. Amphibian egg shells, like their skin, are permeable. If the eggs are not kept moist, the embryos inside easily dry out and die. For this reason, most species still return to water or a very moist environment to breed.

A spring evening in Acadia's wetlands is often accompanied by a chorus of male spring peepers and wood frogs all vying for attention from the opposite sex. For many amphibians, the mating season is in the spring. Adults begin migrating to their breeding waters. For those who live in or near water all their lives, such as the bull frog, the trip is short. For others, however, migration may require crossing busy roads to get to their breeding pond or stream.

Once the larvae emerge, they are well adapted to a watery life with gills for breathing and a tail fin for swimming. They spend most of their time eating and eventually develop their adult characteristics. For most amphibians, the change from larvae to adult is complete after about 12 to 16 weeks. In areas where temperatures become very cold and ponds may freeze over, some amphibians overwinter in their larval stage. The bullfrog tadpole, for example, may overwinter two or three times before it becomes an adult frog.

In temperate places, such as Acadia, where summers are warm and winters very cold, amphibians must hibernate to survive. In the fall, as the temperatures decrease, amphibians burrow below the frostline or in the mud of a lake or pond. During this time their heartbeat and respiration are slowed and the little oxygen needed is absorbed through the skin. As daylight hours increase and temperatures rise in the spring, amphibian activity increases, hibernation is broken, and these creatures must come to the surface once again.

National parks, no longer immune from the effects of human activity, are in an important position to lead amphibian research and to provide information regarding this possible decline. The preserved ecosystems of national parks are crucial ground for amphibian monitoring.

DID YOU KNOW?

- The red-backed salamander is the most common vertebrate in Maine. It has been estimated that at 1/4 oz. each there are 63.2 million pounds of salamanders crawling around Maine. Compare this to about 20 million pounds of moose at 1000 lbs a piece.
- The bullfrog is the largest North American frog with a record length of 8 inches.
- A single male spring peeper repeats his call about 4,500 times at night. It is rare to see a spring peeper—after all, they are only the size of your thumbnail.
- Pickerel frogs are medium-sized frogs that are common and are distinguished by their squarish dark spots in two or three rows on their greenish to brown bodies.
- Northern dusky salamanders are 2 to 4-1/2 inches in length. Half of that length is their tail! They are a mottled grayish-brown color and are often found close to running water.

AMPHIBIAN WORRIES

Mass die-offs of multiple frog species discovered at five wetland sites in some of the most pristine park areas in 2001 have park managers concerned, including about the long-term survival of these amphibians. Five different viruses or fungi that killed large numbers of spring peepers, bullfrogs and green frogs, mostly in the egg or tadpole stage of development have been identified.

Entire populations of spring peepers, a small tree frog, were destroyed at two park sites in 2000 and 2001 by the virus irido (the nation's first documented case). Massive bruising and bleeding occurred, and a year's worth of eggs were lost. Because spring peepers live only three years, there could be a fatal interruption of breeding adult spring peepers at the site because of the egg loss. A fungus called

ichthyophonus caused a mass die-off of bullfrogs at two of the five sites in Acadia. The fungus has been known to kill massive numbers of bullfrogs, but it's more commonly the cause of massive fish kills, particularly mackerel. The samples taken from Acadia revealed telltale signs of the fungus: huge lesions on the internal organs, particularly the liver and intestines.

Ribeiroia, a parasite, caused a massive die-off of both bullfrogs and green frogs at another site, and another parasite called propozoan was found in "vast concentrations" in wood frogs at yet another site.

The most important task researchers must first accomplish is to gather baseline data so they have something to measure and compare their findings against. A critical part of establishing the baseline information is to reproduce the diseases found in the Acadia frogs in healthy samples so that researchers can study the progression of the diseases and hopefully learn what triggers them and why.

At Acadia National Park, biologists are interested in assessing the park's current amphibian population and condition. Potential future declines would be difficult to document without accurate records. Studies are critical considering five wetland sites in the park have had documented mass die-offs of certain frog species.



Fact Sheet – Acadia’s Reptiles

Reptiles seem to be secretive animals in part because of their cold-blooded nature that fluctuates with the surrounding air temperature. They are represented at Acadia by five species of non-poisonous snakes and two species of turtles. During the warm months you may discover some of these shy animals sunning themselves on a rock or log. Colder temperatures force them into burrows under mud, rocks, or earth.

In addition to being cold blooded, reptiles lay eggs with leather shells or give birth to fully-formed young, breath with lungs, have a covering of scales, and either have no legs (snakes) or four legs with clawed toes (turtles and lizards).

EASTERN MILK SNAKE

Rows of reddish-brown patches line the tan to pale gray snake. Two to three feet long, it can be found in woodlands, where its coloration helps in camouflage.

EASTERN GARTER SNAKE

This very common snake can be black, brown, or olive with three lengthwise stripes of various colors—like yellow, green, or brown. Meadows, woods, marshes—the garter snake is found in a variety of Acadia’s habitats. It is usually one to two feet in length.

EASTERN SMOOTH GREEN SNAKE

The name of this snake aptly fits its description. It is a bright green snake with a much lighter underside of white or pale yellow. Small in size, it is only one to one and a half feet in length.

RED-BELLIED SNAKE

The dark gray to black upper body is under laid with a red belly. There are also pale yellow spots at the back of the head. It is a small snake about one foot in length.

RING-NECK SNAKE

A thin yellowish-orange ring is just behind the head on these dark gray snakes. Small snakes, only about one to one and half feet in length, they can be found in moist woods under rocks and rotting logs.

SNAPPING TURTLES

These turtles are common in Acadia’s lakes and ponds. As their name implies these large turtles (adults up to over twenty pounds and one and a half feet in length), can give a nasty bite. They should not be handled. They prefer quiet muddy spots close to the water’s edge.

EASTERN PAINTED TURTLES

If you see a small turtle sunning itself on a log, most likely it is this common turtle. They are only five to six inches long and have patterns of black, red, and yellow along the edges of their smooth shells. Bright yellow spots mark the head.



Fact Sheet – Acadia's Fishery

The management and protection of native fish species and aquatic communities, while providing the recreational angler with a quality fishing experience, is the focus of the National Park Service's (NPS) recreational fisheries program. The NPS together with the Maine Department of Inland Fisheries and Wildlife regulate and manage freshwater fishing in Acadia National Park.

The fish communities of ponds and brooks of Mount Desert Island, particularly those within the boundaries of Acadia National Park, have been influenced by humans for well over a century. Angling pressure has increased substantially, especially in the second half of the twentieth century. This has resulted in extensive stocking of fish species native to Mount Desert Island as well as non-native and exotic (e.g. brown trout) introductions.

Virtually all ponds have been influenced by stocking at some point during the century. Of 24 ponds, only 4 have not been stocked, and these are all under 16 acres in size. The first intentionally introduced species was small mouth bass in 1891. Since that time, brook trout, rainbow trout, brown trout, Sunapee char, lake trout, landlocked salmon, alewives, rainbow smelt, largemouth bass, steelhead, sea-run Atlantic salmon, and various species of sticklebacks have all been stocked in waters within Acadia National Park. As a consequence of these community species alterations, 91% of the ponds that contain fish no longer contain their original species mix.

Historically, 31 species or subspecies of fishes have been confirmed for waters within the park, but only 14 of these are native to Mount Desert Island. The most widespread of these native fishes are banded killifish and golden shiner, each found in 79% of the ponds, as well as in several brooks. Other widely distributed fish species within park waters are brook trout (71% of ponds), pumpkinseed (67%), American eel (63%), white sucker (54%), northern red belly dace, and rainbow smelt (each 50%).

As a general trend, there is less multi-species stocking in the 1990s compared to even two decades ago. Most recent stocking has been with salmonid fishes. Numbers stocked have declined, but the size of stocked fish is larger, to promote higher survival. Only Bear Brook Pond, Duck Pond, and Lakewood have presumably never been stocked. Thus, if natural fish communities are to be studied, these three small ponds probably reflect the original fish communities.

Since almost all waters within the park are biologically altered from their original species mixture, most fish communities will never return to their original state, especially with high angler demands of salmonids from local residents and tourists. Stocking has been a tool for meeting this demand—to introduce new species of game fish or to supplement existing populations. Research could address the progression of community changes and the consequences of such species changes.

Common Fish Species Caught at Acadia:

- Brook trout
- Landlocked salmon
- Lake trout
- Brown trout
- White perch
- Small mouth bass
- Chain pickerel
- Pickerel
- Largemouth bass
- Yellow perch